Kenny Lam
6.813 HW2

Nzuri Heuristic Evaluation

Prototype location: http://web.mit.edu/srumbley/Public/nzuri/
Technical Specs: Windows 7 Enterprise, 4GB RAM, 2.5 Ghz Intel i5
Testing Software: Firefox 12.0

1. Readme Text – Help & Documentation, Minimalist Design. Minor

The first time I loaded the web app, I got this message shown on the left. I've never actually seen this message when using GoogleMaps, so it may be a product of the API you're using, or potentially of GoogleMaps itself. It's odd because I can't seem to reproduce it, so it may just be a message shown if you have a slow or unsteady wireless connection. Either way, the squares stayed darker and the loading message didn't go away even after the map had fully loaded.

Recommendation: I would check into it if you can and see if it's a byproduct of your API. It seems everything you're doing is based off GoogleMaps, so if it's built into that framework, you're probably out of luck. Overall, this isn't a huge issue, but the darker squares just add more complexity to an interface already filled with lots of different colors and textures.
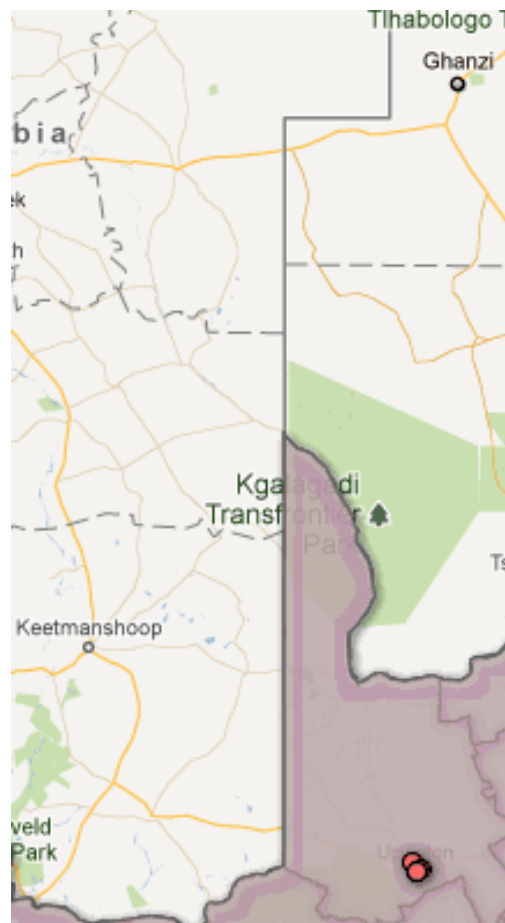
2.   Performance Lag – User Control & Freedom. Minor

At first, I just thought this application did nothing. There's definitely enough of a time delay for me to notice that these pop-ups don't come up very quickly. I can click the location and move my mouse around for quite a bit before the popup actually shows. This is especially prominent when you're clicking on an area that you haven't previously clicked on. This takes quite some time to load the popup. I was actually able to move my mouse halfway across the screen before a popup came up when clicking a new region. I also experienced some delays when dropping down a tower. I could actually drop down a tower and move halfway across the screen into different regions, then the tower would get placed where I originally clicked.

Recommendation: There's only so many regions that you're displaying here. If you can fetch your data using ajax in the background while the page loads, then I would just make the popups using the GoogleMaps API manually on a click event. Right now, I can only guess that you're pushing it off to the API that you use on top of GoogleMaps, which might be part of the slowdown. But really, you should try and take advantage of the fact that there are a limited number of regions and just load the small amount of data asynchronously instead of waiting for a click event. I have no suggestion for the dropping of a new tower, because that might just be part of the API.
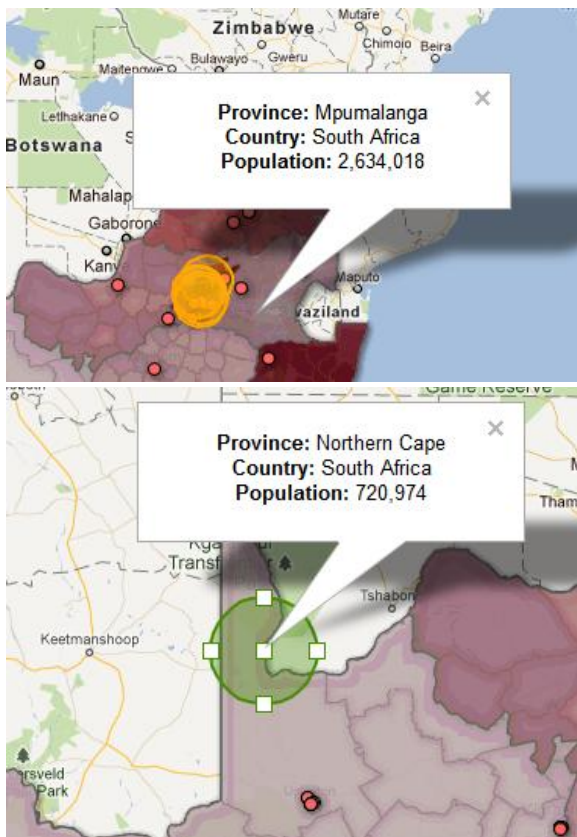
3. Overlapping Popups – Flexibility and Efficiency. Major

I feel this viewing of popups is pretty crucial to your application itself. The visualization of the maps takes up most of your screen, so it *has* to be functional in the right ways. The way I seem to have gotten this to work is that if I have a popup, and I click, the location of the click determines the z-index of the popup. If I click a location higher than the original click, then the new popup is behind the original. If I click a location lower than the original click, then the new popup is in front of the original. Personally, I feel this is a big issue because if you click somewhere, you want to see the results of what you click. Right now, I have to close the original to view the new popup half the time.

Recommendation: If you look through enough elements, a *div* is responsible for each of these popups. I would just change the z-index of the correct div when a user clicks to be higher than the rest.
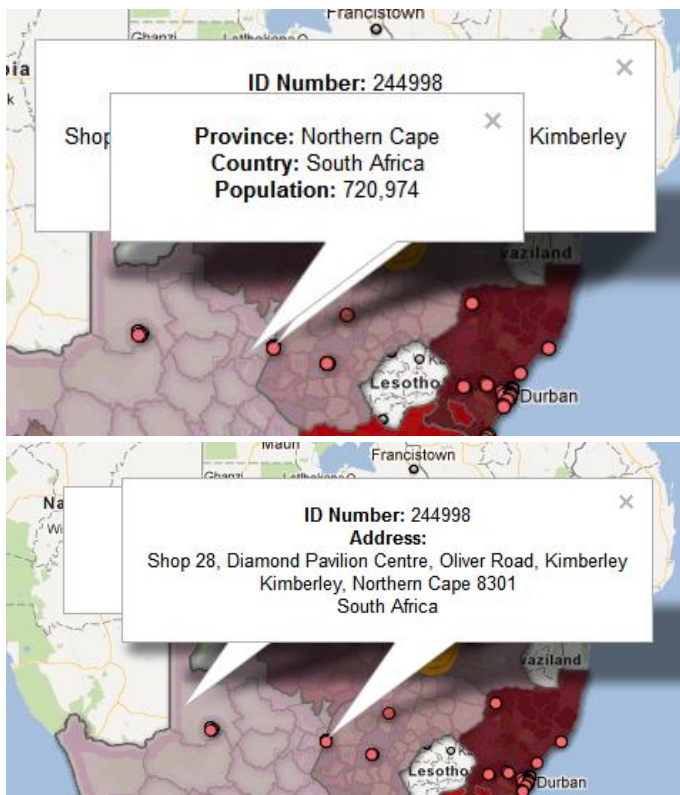
4.   Tower Move – User Control & Freedom, Efficiency. Catastrophic

I was just confused when I first used this. After that, I just got annoyed with how this worked. It turns out that you can only move the tower by using the middle white square. Firstly, that the popup is on top of the middle white square when you first drop the tower down reduces the already small area that you can click the square. This is super annoying because it's already so small, and I found this highly unusable without moving my mouse to the lower or left-most border of the square. Then after that, when I move the tower, there's this odd blue dot that stays where the tower originally was. I had no idea what this was for, but I clicked around some more. If I click on a region, it goes out of this 'tower-moveable' mode. To get back into this mode, I can't even click the green region, which is what I assume is where the tower is. I have to click this small blue dot that's not even where the tower is just to be able to move the tower again. This just makes no sense, but also reduces efficiency because of how small the blue dot is.

Recommendation: Make the move-square bigger, and also make this blue dot move with the square. Perhaps even make it so that the whole circle is moveable. Block the popup for the region when you click.
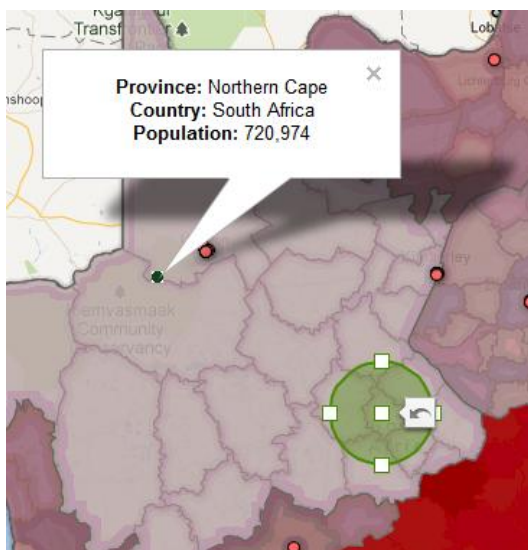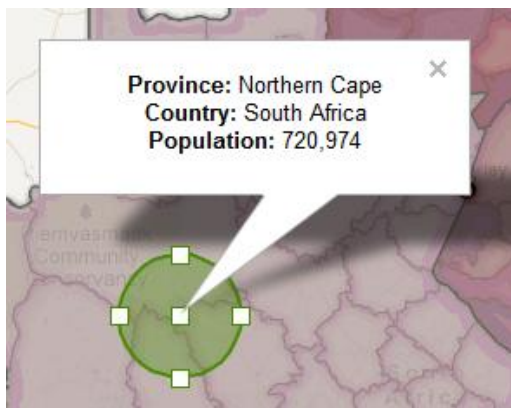
5.   Layering Order – Consistency. Major

All the datasets are put on the left side. However, if I take out the 'Rainfall' data set and put it back in, then I get two different images. I feel this is highly inconsistent in the application, because if I have the same data, then it should be viewed the same way. It could be argued that you want to see what you've most recently selected on top, but if you want to see more than one layer, then that argument is invalidated.

Recommendation: This is just misleading. I would change it to always load the same order of layers to keep it consistent.
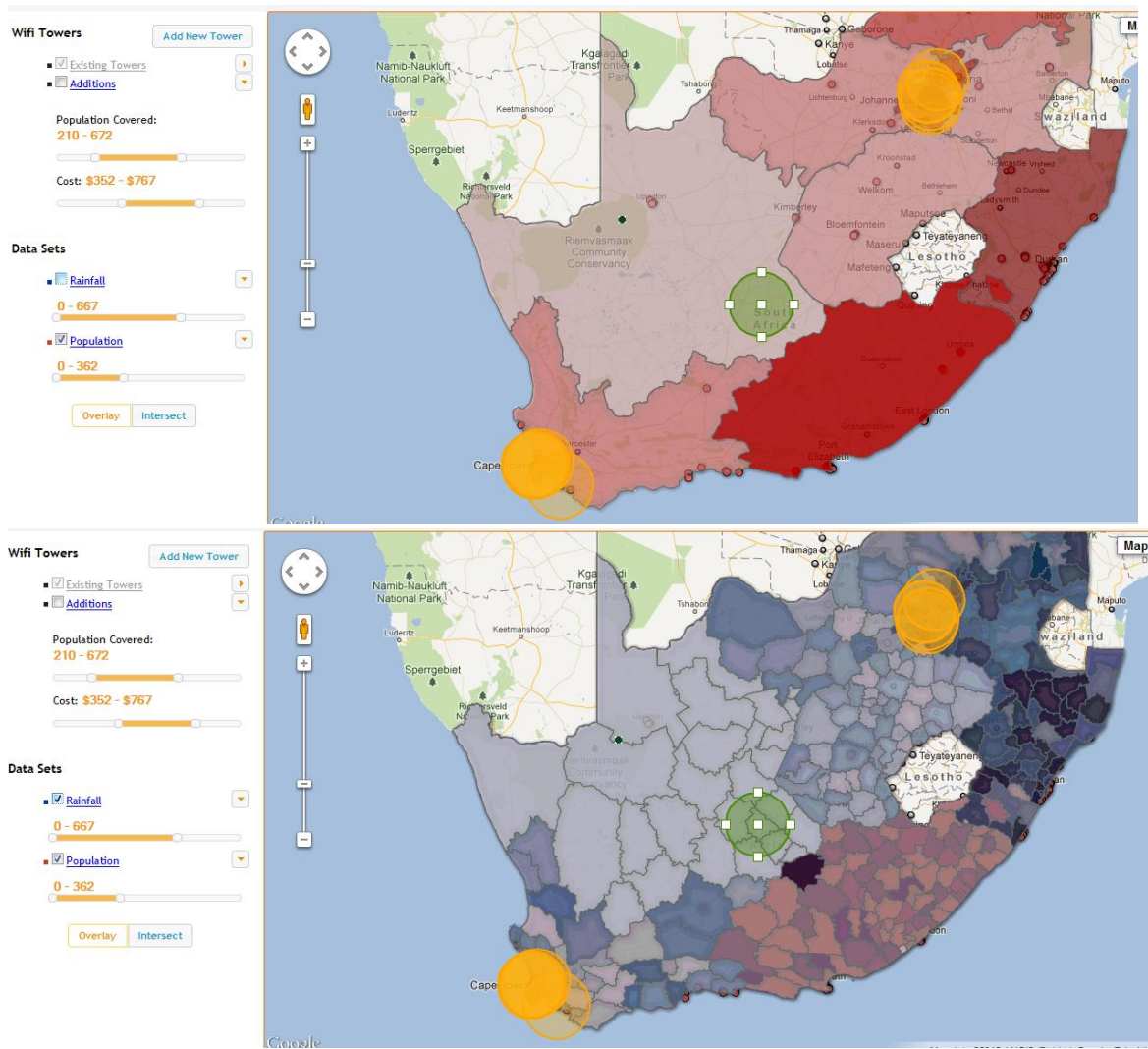
6.   Hidden Filters — User Control, Help & Documentation, Consistency. Major

Presumably, a real user of this system might have more of an idea of what they're looking for, or what this data actually represents. But for beginning users not familiar with this API or with these datasets, they might not know what to look for or how to filter. The filters on the left side are presumably very important, but it's totally unobvious that they exist. I simply stumbled across them because I tried clicking everything. Also, your filters don't always have a label. The "Rainfall" of 552 means what? Because it's displayed on the map and not on your filters, it's also highly inconsistent.

Recommendation: There are a few different ways you could do this for sure. I would say that you should look at other sites that do the same and take some example. Another way would be to put in some hyperlinks and show these options when those hyperlinks are clicked. Like in Google's "Advanced Search", you need some more information scent than just the arrows. You could put a hyperlink that says "Filters".
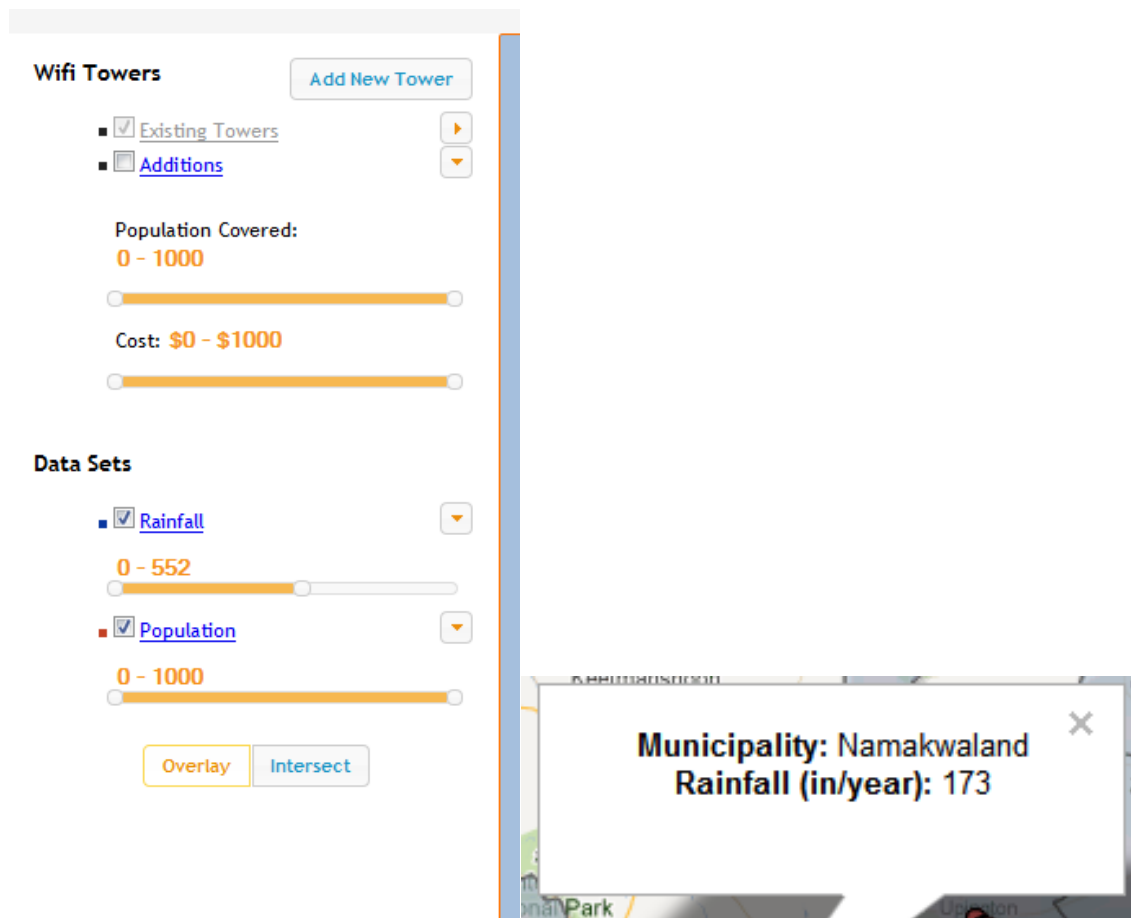
7. Data z-index –User Control & Freedom, Error Recovery. **Major**

It seems that whatever library you're using to talk to GoogleMaps has some specifics you guys didn't take into account. For example, I didn't notice this earlier, but if you enable and disable map layers, then they're just plastered on the top of everything. This happened in the layer ordering (point 5) too, but it seems that this happens with the data points, too. They just get put below, and it's just not clickable anymore. I could recover from this (theoretically) if I could disable and enable the layer with the data points, but the option isn't available right now.
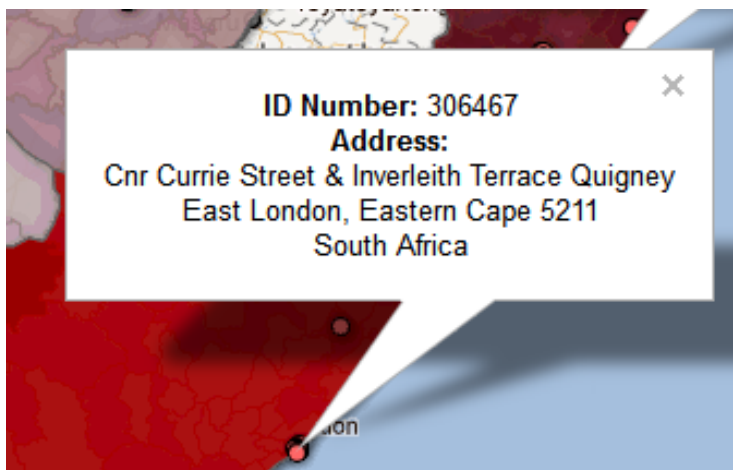
Recommendation: Just pick an order for all your layers. On any layer toggle, just regenerate everything using that established order. This way, you can always put the data points and towers on top, while setting everything else below.
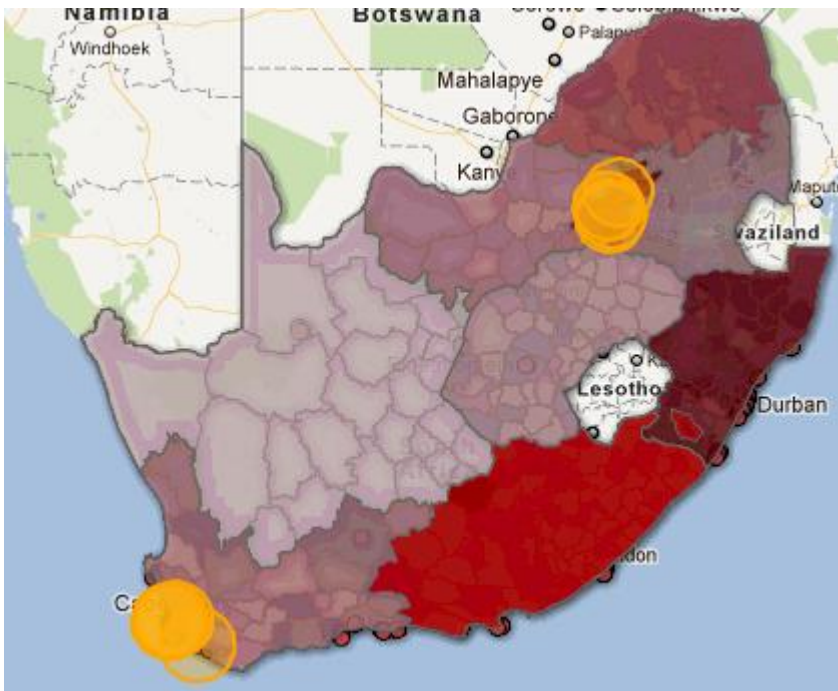
8. Unclear Representations – Help & Documentation. Catastrophic

So you may still want only expert users or those familiar with the data you're working with to use your app. That's fine, but there's just no information about what anything in your app actually means. After dropping down a tower down, I expect that the existing orange ones were already established towers because they're circles too. But what are the red dots? Also on the left side menu, what do overlay and intersect even mean? Is that for the datasets, because it's under that header? How would you intersect the data? I'm just confused with that option, because it would only make sense to me to overlay the data.

Recommendation: Maybe give a legend? I'm not sure what overlay and intersect actually do, so I can't help with that.

ID Number: 306467
Address:
Cnr Currie Street & Inverleith Terrace Quigney
East London, Eastern Cape 5211
South Africa

Overlay | Intersect

9.   Unclickable under Tower – User Control, Visibility of System Status. Major

This is another variant on the problem that has been so prevalent in this system, but that is so important. Again, the map is crucial to your app because it takes up so much space and because it is basically all the visualization that is shown. When displaying a tower's radius, it displays a layer above the map itself. This means if I want to click on one of the red dots, one of the established towers, or a province, no clicks register. This means if I want data in the area of the tower's radius, it's impossible.

Recommendation: Listen for the click event and push it back to the layer to display the data underneath the tower.
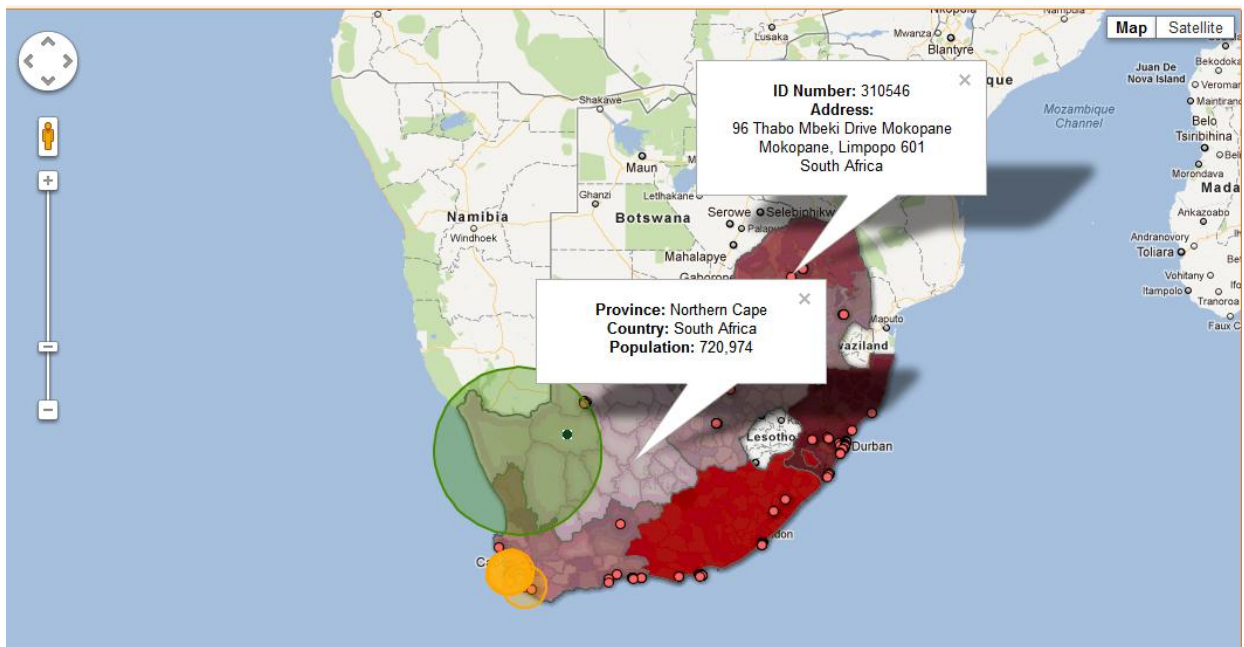
10.   Limited Undo Stack – Consistency, Error Recovery. Catastrophic

From what I can tell, you can really only undo one action at a time. What would be much nicer is having a bigger stack for the set of undo actions. Right now, if I resize it or move it, I can only undo the most immediate action. Also it seems that the undo stack is limited in type also. I can only undo one action in total, not even one resize and one move.

Recommendation: I know it can be really hard to work using these GoogleMaps libraries because they'll have some way of naming their coordinates or datasets, but I think this is a major feature in your app. If you can't undo more than one action, it's pretty annoying and inconsistent with other applications. My recommendation is to dig deeper and catch the coordinates as they're input and give people the option to undo by doing the opposite of all your inputs.
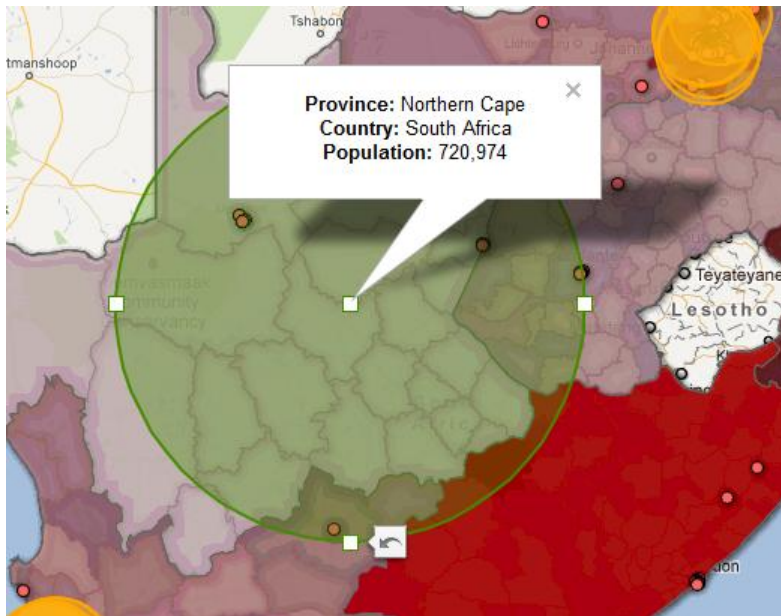
11. Tower Information – Help & Documentation, Consistency. Minor

I'm actually a little confused at what the controls for the tower are actually used for. The cost is pretty straightforward; whoever is thinking of putting down a tower is supposed to be able to estimate the cost of their tower and can manually configure the coverage area that it will provide service to. However, the population doesn't make sense to me. Is whoever's putting these towers down supposed to know the population statistics of where they're putting their towers? I think it would make more sense if, when they adjust the radius of their tower, it just automatically changed the population counter to whatever population lives in the area of the span of the tower radius. Also, are they supposed to be able to set the tower ID? The established towers have ID's assigned, and it seems that it's not set-able for towers that are placed down. I feel this is inconsistent, even if the towers aren't placed down yet, they should be able to have ID's assigned.

Recommendation: None if they're supposed to know this information. Otherwise, automatically put in population data for them.
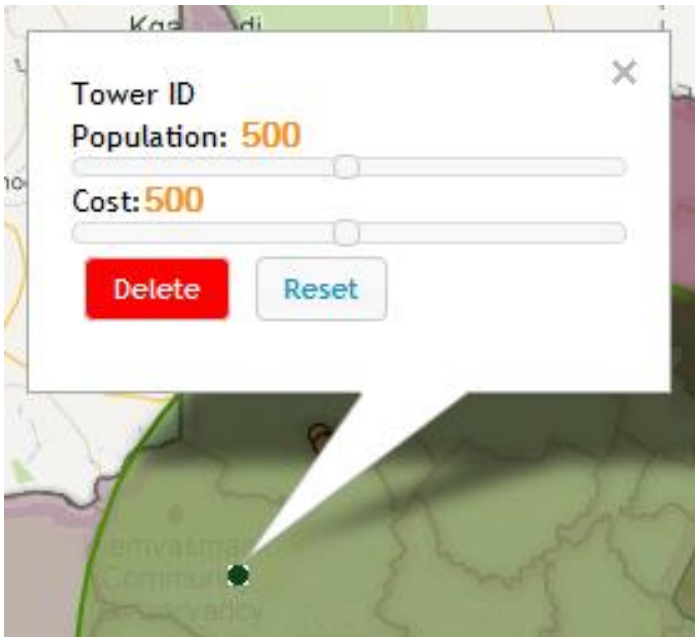
12.   Action Highlighting – Aesthetic. Cosmetic

This is a totally minor detail among minor details, but you guys picked a bad choice of color scheme when doing highlighting over the "Reset" and "Delete" actions. When moving over the "Reset", I can clearly tell that my mouse is over the button. But when I move over the "Delete", I can hardly tell that I'm over it. It's a really tiny thing, but maybe you should pick another highlighting scheme or color scheme for "Delete".

Recommendation: Either make the highlight border thicker, highlight in a different color, or make Delete a different color.
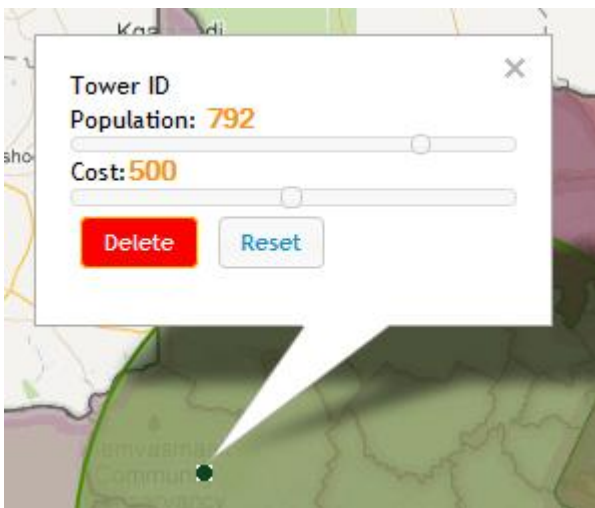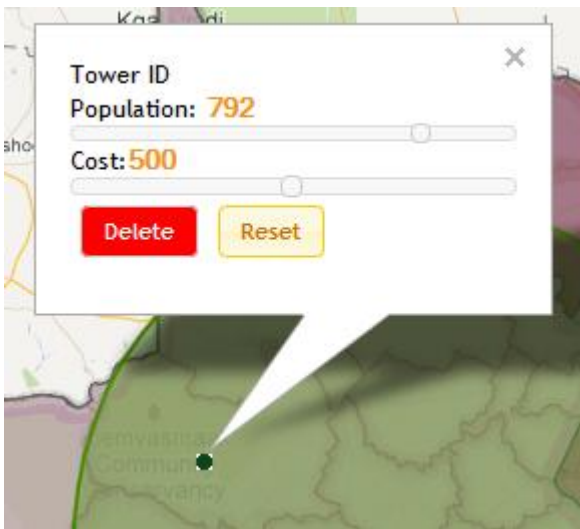
13. Clustering of Data – User Control, Visibility of System Status. Catastrophic

So I wasn't actually too interested in all the data because I had no idea what I was doing. But when I thought about it more, I ran into this same problem that's been around your system. With the established towers, you need to be able to click the red dots below it, which you can't do right now. That problem is mostly a part of my point 9, but what if there are several things under a tower and you want to select one? What I mean is that, let's assume you fixed point 9. Now what? If you look below, you can tell there are so many different towers stacked above one another. But I want data for all of them, how would I be able to get that? If you fixed problem 9, I would be able to click all of the towers and get the popup for each of them. But how would I know which one I was clicking? Just showing me the popup with the tower ID doesn't tell me anything, because I don't know which tower has which ID, and they're all clustered together.

Recommendation: Highlight the object that I'm currently selecting on a mouseover. If you select a good color, I'll be able to tell which tower I would get info about when I clicked. You could also do some popout effects, which temporarily makes the object you're over bigger when you mouseover, but this could make it hard to select another tower when they're so close together.
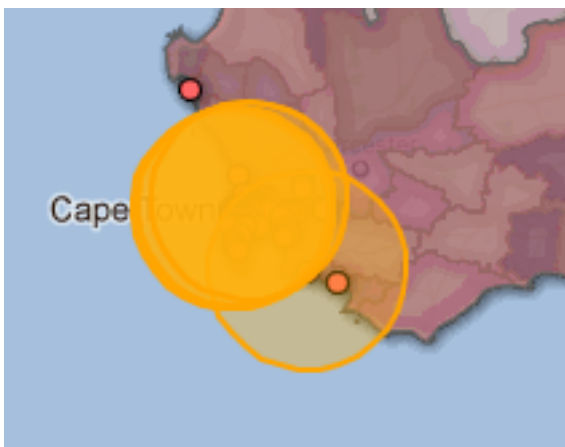
14.   Data Layer Meanings – Recognition, not Recall. Minor

This is a moderate thing, but I felt it was less important than a major error. But not only are your data points unobvious, but so are your layers. I can only assume that in the "Rainfall" layer, darker blue means more rainfall, but how much? I just don't know what any of the colors for the red actually mean, what level of population? I could just fiddle with the filters to find out (if they worked), but that requires more work on my part, and that's not to say I'll remember what all the colors mean once I figure them out. I guess I could just click on the provinces for information about their population, but that's just something else I have to do. For the "Rainfall" layer though, this is a much bigger problem because there are more colors and more regions. Also, depending on the rain distribution, the colors may not represent equally spaced partitions, so I don't know what hey show.

Recommendation: Put in a legend that can be minimized or somehow taken away from the map.
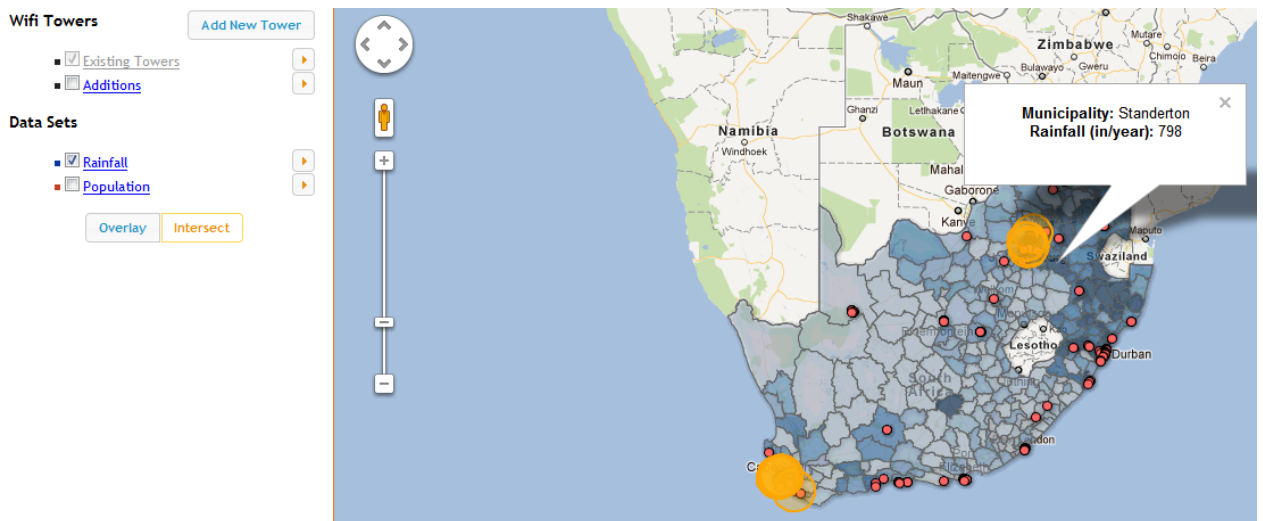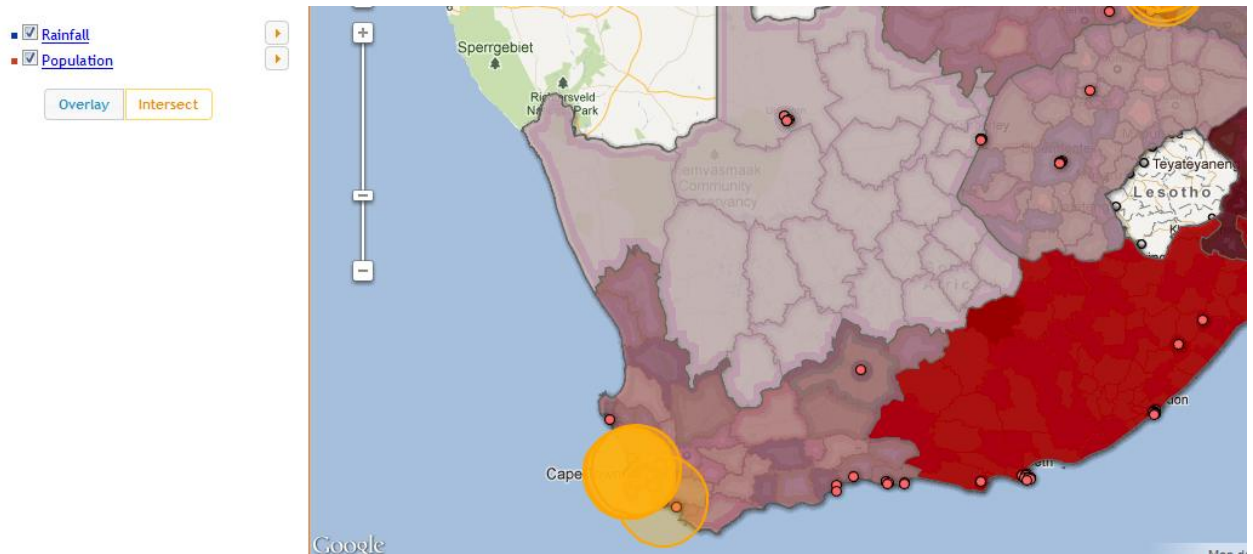
15.   Tower Displays – Consistency. Major

There's a large inconsistency in what you display for towers. A tower should be a tower, and I should get the same information for each of them, right? Why shouldn't I? But I can only see filter-able information from towers that I place. Why can't I see population and cost for the ones I already put down? Also, I should be able to see the latitude and longitude for the towers I put down. Also, how I got that your system displayed information is that you can only select one of each type of item (one population province, one rainfall region, one existing tower, one newly placed tower). Just something to keep in mind, but it makes me feel that there's a distinction between an established tower and a newly placed tower.

**Recommendation:** Display the same info.
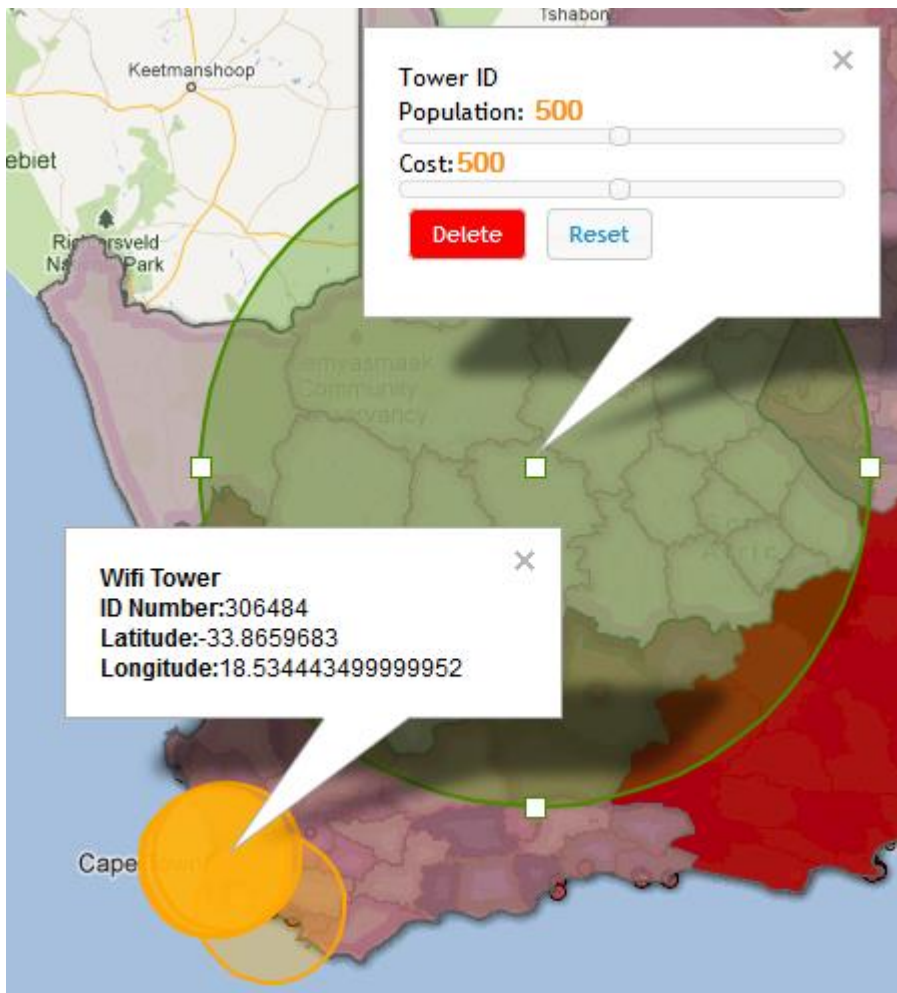
16.   Google Maps – Match the Real World. Good

Your choice to use a library that uses GoogleMaps is a really good choice. It's probably the most popular service for maps, so everyone can use it really easily. Additionally, all the good things about GoogleMaps comes along with your library, such as if I click a region near the edge of the screen, it will move the map to show my popup information.
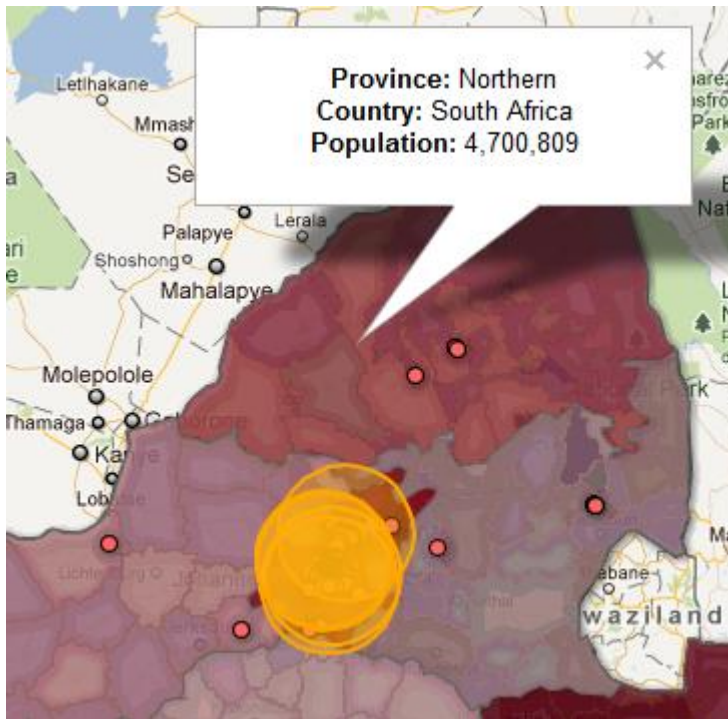
17. Layout – Minimalist Design. Good

I like the look and feel of your app. It's very the same as the layout for GoogleMaps, but I still like it. I like the logo and that the top is so empty. I also like the default hiding of the filters, though they're hard to find, because it minimizes the amount of clutter on screen. Overall, it looks very clean. Maybe, like Google, you could also use the top bar to give the user some options, but it still is very nice right now.
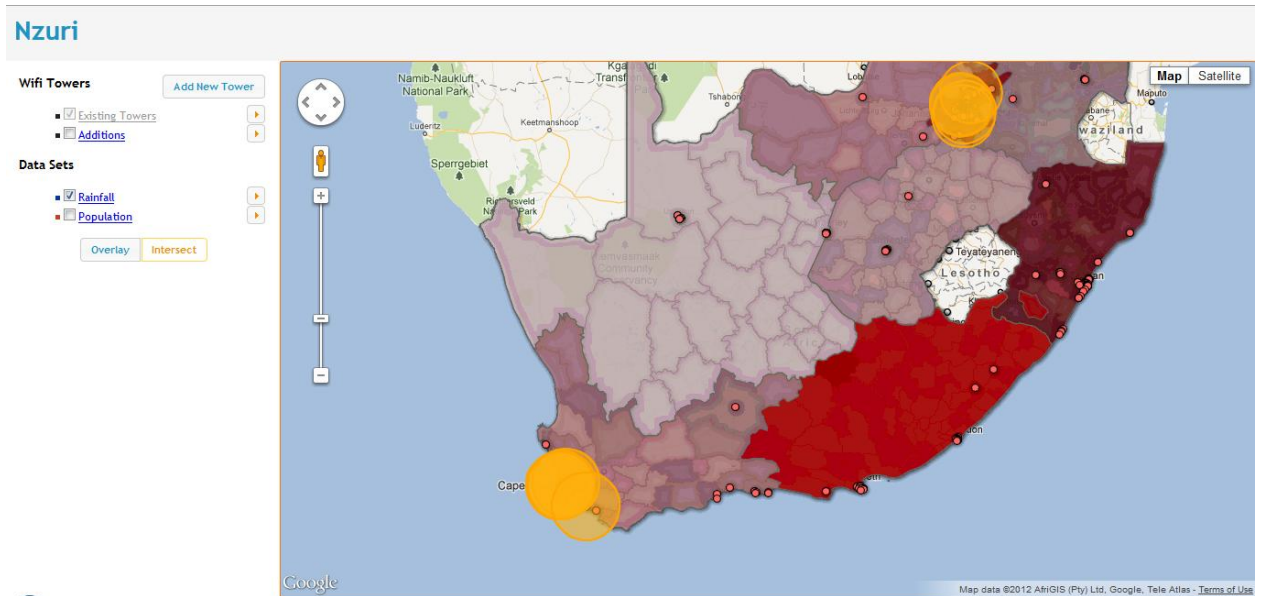
18. Static Popups – User Control. Minor

I was thinking of a better way to play with your popups and I realized that it really is limited in where they display. It would be really nice to be able move them around. It's not too big a deal, but I might have to close a few boxes to see what I want.
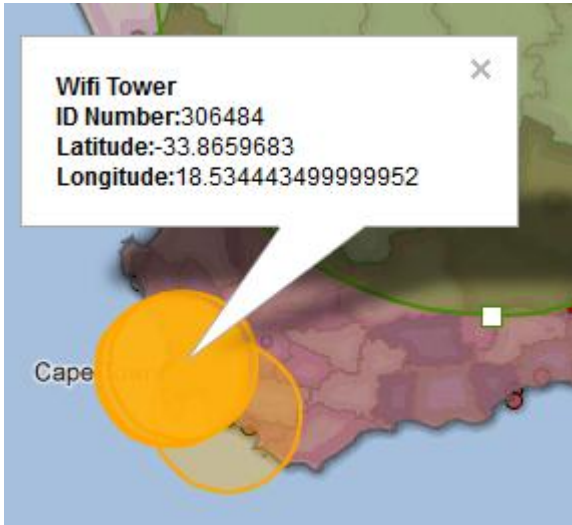
19.   API Errors – Error Reporting, Diagnosis, and Recovery. Major

It seems that there are additional errors in the API that you guys are using, but there's no way of documenting or telling you guys that. Right now, I can't tell what's wrong, but if I click on a province, I can't do anything. It doesn't show me the province data, and I have to click on the red dots under my other layers to get any popups right now. I believe this is in error with your application, and I don't know why this is happening, but imagine if I had put down more towers. There's no way to save state, so I would just have to refresh the page, making me lose all my changes.

Recommendation: If you can figure out the undo, you can figure out their data-scheme, and you can put in a manual refresh and reload the features they put into the map.
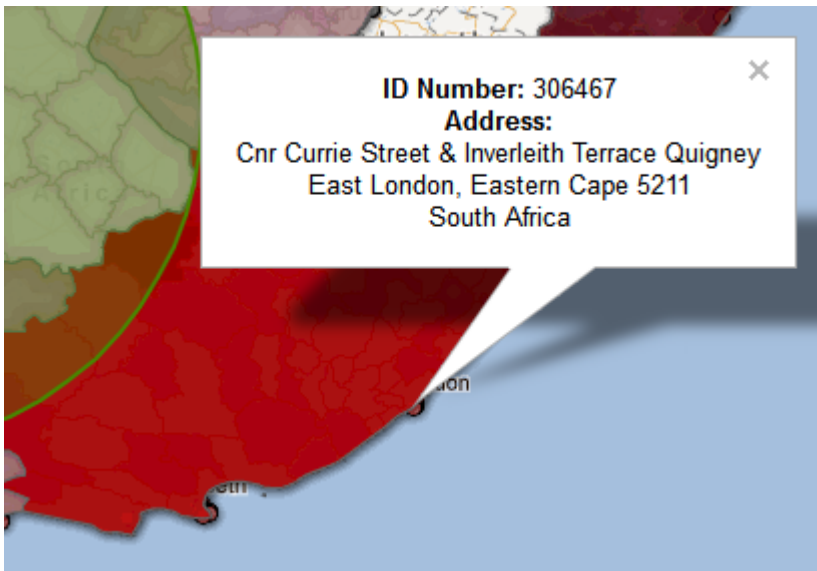
20.   Scroll Bar – Consistency. Major

If you max all the options, then your scroll bar isn't consistent with the Google look and feel you seem to be going for. What should happen is that only the left side iframe can scroll, but now the whole window scrolls. Maybe someone wants to see all their filtered options at once, in which case, you wouldn't be able to see the map anymore (if you had enough options. I presume you'll have more than what's currently offered in the final version).

Recommendation: Make the left side an overflow enabled div or iframe with overflow enabled, but your web page as a whole shouldn't be scrollable.

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6.813 HW2
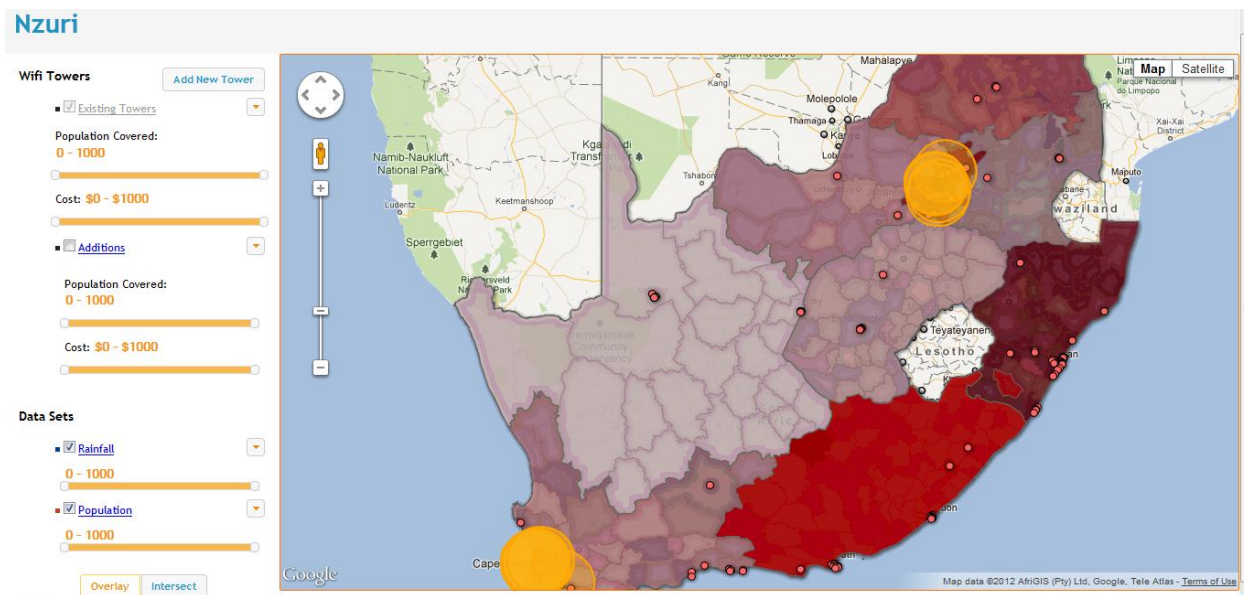
Summary

Overall, the first look at this application is very clean and sleek. At a glance, it seems you've stripped GoogleMaps look and put in your own, which is fine, because it's consistent with the external world, and people will know where to look for controls. Whether or not the staff have a problem with this is another story, but I don't mind at all.

I wish there were actual tasks, though. I read through what your app is, and then I went to GR1 to see what I was supposed to be able to do, because I was just clicking around. Unfortunately, though, the tasks were just super high level. I didn't have anything concrete to do: the collaboration and sharing was just something too high of a level, and I had no direction. This just meant that I was clicking around trying out everything, but without any idea what anything actually was or meant in your prototype. Without a solid direction, I can't tell you how I feel about doing anything though, because I just made up my own things to do, but I have no idea what an actual user would do.

When I first started using it, though, I was just confused. There's not a whole lot of information scent for first-time users to what anything in your app means. Should people know that it's population and rainfall that are important in determining where to put wifi towers? Maybe this is just what you guys put in for the prototype, but these layers didn't make sense to me. The filters are so hidden I thought your app did nothing until I played with them. The filters are also, unfortunately, inconsistent with the map because of the lack of labels.

Overall, I didn't feel a huge amount of functionality. I just felt like all I was doing lead to nothing at all. The only thing I felt I could do was put down towers and change the map layers. None of the sliders lead to any working actions, and I can't delete or reset the towers. Other than that, I could just ask for information by clicking on areas, but that was about it. I couldn't do any of the high level things you guys wanted in GR1 or any of the pseudo-subtasks that you guys touch on(sharing with others, insert text/comments/highlighting), so I just basically tested the API you guys used.

I feel there's a lot of work left on this project in terms of actual functionality and usability. Working with the towers is highly clunky and requires some specific clicking (the small square, the weird anchored blue dot), popups get in the way, and I can't always tell what I'm clicking for more information about or click what I want more information about. There's a limit to one undo, which just means users have to either start over or think very hard before making actions. You guys just need to figure out some way to order your layers to make things consistent when viewing and working with your application, or someone will run into all the errors I did. Lastly, the biggest task is probably digging into the API. You guys talk about collaborating and sharing, but I couldn't remotely do either of those tasks. What would have been great is if you had features that were loaded on a time interval, so I could work with another "person" in pseudo-real time. If you guys want people to be able to collaborate or share, you probably need to do some digging into the API, figure out their encoding scheme for features, put those into a database, and load those features, in order, for people that want to collaborate/share together. There may be another way, but I don't know how to do it other than that.